

# Trauma surgery training

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# Trauma surgery training: the Dutch approach

## Introduction

In the last few decades, general surgery is getting more and more divided into subspecialties in the Netherlands. Until now, in most hospitals there is one general surgery department in which visceral, oncologic, vascular and trauma surgeons are working together. The development of specialization increases the quality of the treatment of selected diseases or injuries. However, the overview of the whole patient can become endangered. It is important to train specialists, but every surgeon has to have a wide knowledge of patient care. This is eminently important in the treatment of polytraumatized patients.

## Trauma care in the Netherlands

The Netherlands is a small but densely country with approximately 17 million inhabitants. Most accidents are related to traffic, work, and sports. Violence-related injuries are less common. Since 1998 the Ministry of Health, Welfare and Sports selected 11 hospitals as level 1 trauma centre. These 11 trauma centers have the responsibility to organize the trauma care in their region. They focus in particular on care for polytraumatized and tertiary referred patients, classification of the regional hospitals in level 2 and 3 trauma centers (**Table 1**), and registration of hospitalized trauma patients in a national database (Landelijke Trauma Registratie). The following trauma centers are having a helicopter team with a surgeon or anesthesiologist and nurse for prehospital care: Amsterdam, Groningen, Nijmegen, and Rotterdam. In contrast to Germany, there is no so-called 'Notartzt' system. The ambulance service personnel are trained to stabilize patients and to start CPR. They are also allowed to give selected medical treatment [1].

In the hospital the trauma surgeon is in the lead during whole treatment of a trauma patient, from the emergency department to discharge. A trauma surgeon is a general surgeon who is trained to treat thoracic, abdominal, and musculoskeletal injuries. When necessary, other disciplines are consulted. Polytraumatized patients are always treated by the trauma surgeon. Depending on local agreement, isolated fracture care can also be done by the orthopedic surgeon. Nowadays, approximately 75 % of fracture care is done by trauma surgeons and 25 % by orthopedic surgeons.

**Table 1** Overview of trauma centers

| | |
|---|---|
| Level 1 trauma center | Trauma surgeon 24/7 on call<br>Primary and definitive care for polytraumatized patients<br>All medical specialists |
| Level 2 trauma center | Trauma surgeon 24/7 on call<br>Primary care for polytraumatized patients<br>Mainly monotrauma care (fracture treatment)<br>No neurosurgery or plastic surgery |
| Level 3 trauma center | General surgeon 24/7 on call<br>In day time, a fracture care specialist is always present (trauma surgeon or orthopedic surgeon)<br>Monotrauma care (fracture treatment) |

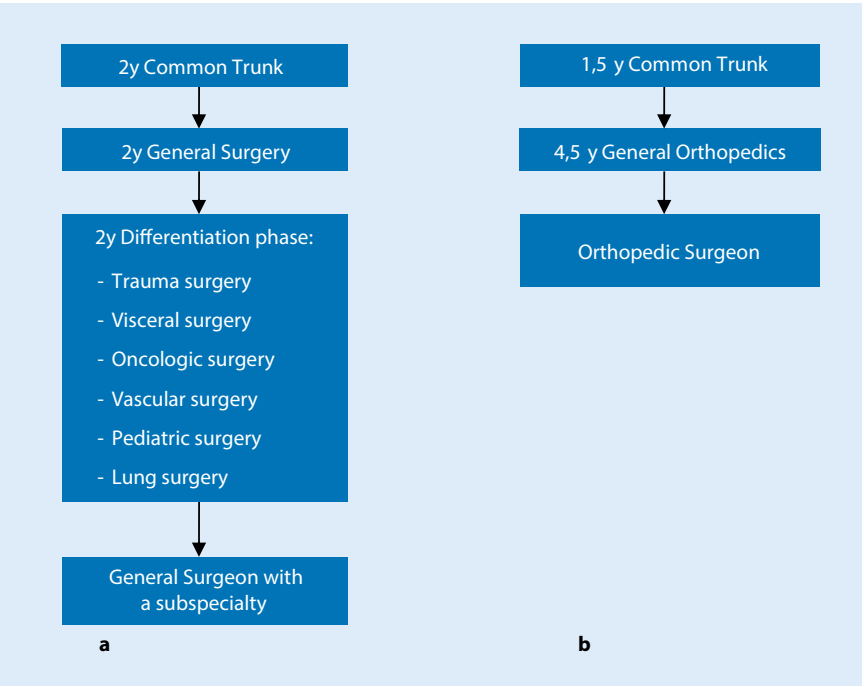


**Fig. 1** ▲ Training overview in general surgery (**a**) and orthopedic surgery (**b**)

## Abstract · Zusammenfassung

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# Trauma surgery training: the Dutch approach


### Abstract

Surgery is evolving rapidly and surgeons continue to specialize. The care for trauma patients will always need a physician with a broad base of knowledge and skills. In the Netherlands this care is well organized with a trauma center system and is mainly performed by specialized general surgeons, called trauma surgeons. These surgeons are trained in a well-defined education program and perform treatment for thoracic, visceral, and musculoskeletal injuries. In the near future collaboration with the orthopedic surgeons will be intensified, because currently they are less involved in trauma care. This will potentially develop to a common trauma unit and education program.



### Keywords

Trauma surgery · Education · Trauma unit · Trauma care · Netherlands


# Ausbildung in der Unfallchirurgie: niederländischer Ansatz


### Zusammenfassung

Die Chirurgie entwickelt sich rasant, und die Chirurgen spezialisieren sich immer weiter. In der Versorgung von Unfallpatienten wird immer ein Arzt mit einer breit angelegten Basis an Wissen und Fertigkeiten erforderlich sein. In den Niederlanden erfolgt diese Versorgung gut organisiert innerhalb eines Systems von Traumazentren und wird hauptsächlich durch spezialisierte Allgemeinchirurgen durchgeführt, die Traumachirurgen genannt werden. Sie werden in einem genau definierten Weiterbildungsrahmen ausgebildet und führen die Behandlung von thorakalen, viszeralen und muskuloskelettalen Verletzungen durch. In naher Zukunft wird die Zusammenarbeit mit Orthopäden intensiviert werden, weil sie derzeit noch weniger an der Unfallversorgung beteiligt sind. Dies kann möglicherweise zur Entwicklung einer allgemeinen Traumastation und Weiterbildung führen.



### Schlüsselwörter

Unfallchirurgie · Weiterbildung · Traumastation · Unfallversorgung · Niederlande


**Infobox 1** Mandatory courses during trauma surgery training

- Advanced AO/OTC course
- AO/OTC Pediatric course
- Definitive Surgical Trauma Care (DSTC) Course
- Emergency Management of Severe Burns (EMSB)
- Hand and wrist course (Dutch course)
- Dutch Traumasurgery Days
- 1 International Trauma congress

## Surgical training in the Netherlands

The training to become a trauma surgeon and orthopedic surgeon is separate [2]. When the basic medical training is completed, young physicians start working as resident not in training or they start a research project to write a PhD thesis. The organization of surgical training is divided into 8 regions and all regions are part of a university hospital with one main responsible trainer. Every region has several regional hospitals with local responsible trainers.

To become a surgical resident in training, someone has to apply for a residency and has to do a job interview with all local trainers. The training is competent based and every resident has a digital portfolio and has to get a mandatory amount of clinical and operative reviews from the teaching surgeons in this portfolio. Every year, the resident has to do an exam adopted from the American Board of Surgeons. The education program takes 6 years and 2 or 4 of these 6 years are respectively spent in a university hospital or in a peripheral clinic. The first 2 years is called the Common Trunk and consists of rotations in emergency department, intensive care unit, vascular, visceral, and trauma surgery. The second 2 years are aimed at advanced surgical training in vascular, visceral and trauma surgery. The resident reaches a level of independent clinical and operative skills in these first 4 years. The last 2 years are called the 'differentiation phase'. The resident specializes in one of the subareas of general surgery: trauma surgery, visceral surgery, oncologic surgery, vascular surgery, lung surgery, or pediatric surgery. After 6 years the resident finishes the training and will be certified as general surgeon and, depending on the differentiation, for example as trauma surgeon.

The training in orthopedic surgery has a Common Trunk which is comparable except for the intensive care unit rotation, which is abolished. The following years of the orthopedic surgery training are very broad and a separate 'differentiation phase' is missing (**Fig. 1**).

## Trauma surgery training

In the 'differentiation phase' of the surgical training, the resident focuses on trauma surgery practice. One of 2 years has to be done in a level 1 trauma center and the other in a level 2 center. During shifts, the resident is responsible for the whole surgical unit and also comes in contact with patients with vascular and visceral problems at the emergency department or during operations. There are a number of mandatory courses (**Infobox 1**). At the end of the 'differentiation phase', the resident is able to stabilize trauma patients (musculoskeletal, thorax, and abdominal) and to perform definitive treatment for the most occurring injuries. After this training, there is the possibility for optional fellowship training to superspecialize in for example pelvic of spine surgery.

## Future perspectives

Since a structural collaboration between trauma surgeons and orthopedic surgeons is missing in the Netherlands, we are actively in discussion at this moment. In the very near future we are planning to create a common trauma unit where trauma surgeons and orthopedic (trauma) surgeons are working together in a so-called 'inner ring'. These surgeons

are capable to perform complete primary care for polytraumatized patients and they can also perform definitive treatment. When necessary, the 'outer ring' with other medical disciplines (e. g., hepatobiliary surgeon, cardiothoracic surgeon, neurosurgeon, otorhinolaryngologist) are consulted to assist in treatment. The second topic which is being discussed is the possibility for a common training in trauma surgery for general and orthopedic surgeons. However, this is still in its infancy.

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## Compliance with ethical guidelines

**Conflict of interest.** H.P.A.M. Poos states that he has no competing interest.

This article does not contain any studies with human participants or animals performed by the author.

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